DOCUMENT RESUME

ED 114 541 CE 005 389

TITLE	Intrinsic-Extrinsic Motivation Concepts as Applied to Selected Vocational Instructional Programs. Final Report.
INSTITUTION	Mount San Jacinto Coll., Gilman Hot Springs, Calif.
SPONS AGENCY	California Community Colleges, Sacramento.; California State Dept. of Education, Sacramento. Research Coordinating Unit.
PUB DATE	Aug 73
NOTE	25p.; Not available in hard copy, due to marginal reproducibility
EDRS PRICE	MF-$0.76 Plus Postage. HC Not Available from EDRS.
DESCRIPTORS	*Correlation; Data Analysis; Intelligence Level; *Intelligence Tests; Learning Motivation; *Motivation; *Performance Factors; Stenography; Student Motivation; Typewriting; *Vocational Education

ABSTRACT

The student sought to identify positive factors which might be used to increase the performance levels of students in vocational classes and to investigate the relationship between motivational characteristics (intrinsic and extrinsic) and individual performance. Subjects included students in typing and shorthand classes and their two instructors. The students were grouped according to the following levels: high I.Q.--intrinsically motivated; high I.Q.--extrinsically motivated; average I.Q.--intrinsically motivated; and average I.Q.--extrinsically motivated. Procedures used in testing the six hypotheses formulated for the study were: intelligence testing; occupational preference inventory; pretest to measure developmental level of students and posttest for subject evaluation; and performance rating based on quality and amount of work accomplished. Instructors and instructional materials were also tested to rate their motivational orientation as intrinsic or extrinsic based on the occupational preference inventory. Data gathered from the study were analyzed, interpreted, and tested on their applicability to the hypotheses. No substantive evidence showed that different motivation or different combinations of variables promoted or inhibited the performance of the subjects in the study. A bibliography is included, and the instruments used in the study are appended. (Author/EC)

****
* Documents acquired by ERIC include many informal unpublished *
* materials not available from other sources. ERIC makes every effort *
* to obtain the best copy available. Nevertheless, items of marginal *
* reproducibility are often encountered and this affects the quality *
* of the microfiche and hardcopy reproductions ERIC makes available *
* via the ERIC Document Reproduction Service (EDRS). EDRS is not *
* responsible for the quality of the original document. Reproductions *
* supplied by EDRS are the best that can be made from the original. *
****

ED114541

OCT 9 1975

U S DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY

FINAL REPORT

Project No. 33-67132-C084-72

INTRINSIC-EXTRINSIC MOTIVATION CONCEPTS AS APPLIED TO SELECTED VOCATIONAL INSTRUCTIONAL PROGRAMS

Mildred E. Hight, Project Director
Mt. San Jacinto College
P. O. Box 248
Gilman Hot Springs, California 92340

August, 1973

CALIFORNIA STATE DEPARTMENT OF EDUCATION
Research Coordinating Unit, Vocational Education Section

and

CALIFORNIA COMMUNITY COLLEGES
Office of the Assistant Chancellor for Vocational Education

CE 005 389

BEST COPY AVAILABLE

TABLE OF CONTENTS

	Page
ACKNOWLEDGEMENTS	i
ABSTRACT	ii
INTRODUCTION	1
Part I, RATIONALE AND PROCEDURES	2
Part II, DATA PROCESSING AND INTERPRETATION	8
Part III, SUMMARY AND CONCLUSION	14
BIBLIOGRAPHY	15
APPENDIX	16

ACKNOWLEDGEMENTS

The Project Director expresses appreciation to the California State Department of Education, Research Coordinating Unit, Vocational Education Section; and to the Office of the Assistant Chancellor for Occupational Education, Mr. Lee Baldwin, for the financial support of this project.

Appreciation is also extended to the many individuals who have carried out various tasks essential to the initiation and completion of the project: Dr. Milo P. Johnson, Superintendent-President of Mt. San Jacinto College (especially in the funding and initiation of the project); Mrs. Mary Lucus (testing and data collection); Dr. Hilding E. Nelson (data analysis and general coordination); Mr. Charles Rohr and Mrs. Anne Schatz (cooperating instructors); and of course to all of the students who were its subjects.

Mildred E. Hight, Dean
Student Personnel Services

ABSTRACT

Problem. This study sought to identify and categorize selected students, teachers, and instructional materials into specific motivational types; and to assess possible relationships between the factors (in various combinations) and the class work performance of the student-subjects.

Purpose of the Study. The study's main objective was to identify positive factors which might be used to increase the performance levels of students in vocational classes.

Procedure. Testing subjects for I.Q. and motivational (extrinsic or intrinsic) orientation.

Instructors were tested using the Occupational Preference Inventory (OPI) and classified as extrinsically, or intrinsically, oriented.

Instructional materials used by the students were categorized as intrinsically, or extrinsically, motivating by students using an Instructional Materials Inventory.

Student performances were rated in terms of the grade and the amount of work accomplished. These scores were divided into high, average, or low performance levels on the basis of mean scores and standard deviation.

Performances were statistically related to the independent variables wherever possible.

Summary. The data available through the study did not show any significant relationships between the subjects performance and their motivational orientations. It did reinforce the fact that performance of these business education students related directly with I.Q.

Recommendations. (1) That a larger population be selected in any further study which would allow matching of subjects more equitably. While there appeared to be no recognizable sample bias, some categories of subjects and variables were underrepresented. (2) That considerable effort be expended in the refinement of instruments which will measure specific attitudes, orientations, and characteristics more discretely.

INTRODUCTION

Alert educators continually seek to identify factors, conditions, and situations which can increase the effectiveness of individual learning. One way to do this is to look at research and then try out apparently effective experimental treatments in day-to-day situations. If experimental data can be substantiated in regular classroom locales, then indeed it begins to assume functional validity.

One attempt to examine an experimental concept in a conventional setting has been described in the following pages. Herein, you will find the results of an investigation of relationships between motivational characteristics and individual performance in two selected vocational classes during the 1972-73 school year.

Part I
RATIONALE AND PROCEDURES

Rationale

In 1959, industrial psychologists (Herzberg, et al) derived the concept that individual types of motivation lead an individual to respond to his environment in identifiable ways. These basic types of motives have been defined, herein, by the terms: intrinsically motivated and extrinsically motivated.

Presently in vocational education, normal classroom procedure presents the student with a body of material; then, as a supplementary feature and through various means, tries to adjust student orientation toward learning -- attempting to modify his self-concept, his values, etc. in ways to increase his receptiveness to that body of material.

This study is predicated on the general theory that the prevailing practice discussed above is not successful. As one alternative, this research tests the hypothesis that: it is possible to identify which motivation group each student, each instructor and each unit of classroom instruction belongs; and further, that the more homogeneous the motivation of the three interacting units, the higher will be the educational output of the student. This study has added importance in terms of current pressures to reshape a national emphasis toward career education, to restructure instructional methods in ways which will provide maximum performance and learning for all, and to find means for validating cost-effectiveness.

Specifically, the present research investigated the relevance of the intrinsic motivation-extrinsic motivation concept formulated by Herzberg, Mausner and Snyderman (1959), extended by Herzberg and Hamlin (1961), and further explored by Haywood and Dobbs (1964) to the output (performance) of vocational students in classroom assigned tasks.

The present study explored some of the environmental variables which might be expected to maximize the effects of individual differences in intrinsic-extrinsic motivational orientations. These include: (a) determining whether verbal intelligence is related to intrinsic or extrinsic motivation, (b) assessing the effect of the instructor's motivational orientation on the performance of his students, and (c) assessing the effect of the motivational characteristics of vocational classroom units of work on student performance.

Procedures

Working Hypotheses

Six major hypotheses were formulated for investigation during the study. Using the Null Hypothesis format, these presume that there will be no significant differences in the performances of the subjects:

1. identified as intrinsically motivated when their units of work are intrinsically motivating.
2. identified as extrinsically motivated when their units of work are extrinsically motivating.
3. identified as intrinsically motivated when their instructor is intrinsically motivated.

4. identified as extrinsically motivated when the instructor is extrinsically motivated.
5. identified as intrinsically motivated when their units of work are intrinsically motivating and their instructor is intrinsically motivated.
6. identified as extrinsically motivated when their units of work are extrinsically motivating and their instructor is extrinsically motivated.

A secondary hypothesis postulated that there would be no direct dependency between individual intelligence scores and individual motivational orientation (i.e., that these variables are independent).

Devices

Intelligence Testing

The Lorge-Thorndike Intelligence Scale has been administered to all subjects. Based on these scores, subjects have been grouped into two intelligence types: high intelligence (scores of 95 and over), and average intelligence (85-94). Lower-level subjects have not been included in the study.

Occupational Preference Inventory

All subjects in the study took the choice-motivator scale consisting of 20 pairs of vocational titles. Subjects were instructed to indicate which one of each pair they would rather be; then to give a one-sentence reason for that choice. Actually, the vocational choices are not scores. The relevant information from which a score is derived is the reason

for the choice. Scoring criteria developed by Hamlin and Nemo (1962) were used. Reasons indicating self-actualization or task-related motives (e.g., more challenge, opportunity to learn) are scored in the extrinsic column, while reasons revealing environmental concern (e.g., better salary, better physical working conditions) are scored in the intrinsic column. A copy of the inventory has been included in the Appendix.

Pre- and Post-tests

To make certain that all subjects were assigned into classes commensurate with their developmental levels, instructors tested each individual prior to such assignment. The examinations and performance tests used have proven practical applicability.

Post-tests were created by instructors for subject evaluation leading the assignment of letter grades. These evaluations were based upon specifically defined measurable objectives and measured both quality and quantity of performance.

Performance Rating

Performance rating included both the amount of work accomplished during a specific period of time, and the quality rating for such work. The courses selected for the study were already designed to provide variable credit and grade variability on an individual basis. Consequently, performance raw scores were obtained by multiplying credits-earned, by an assigned letter-grade value.

In typing courses, credit could be earned in 1/2-unit increments -- up to 2 credits. Using 4-point (A), 3-point (B), and 2-point (C) grade values, the raw-score range in typing could range from one to eight points.

In shorthand courses, credit increments were one-unit -- with a maximum of 3 credits. In this case, raw performance scores could range from two to twelve points. To make these scores comparable with the 2-credit typing course, these scores were adjusted by multiplying each score by 2/3.

Instructor Motivation Rating

The Occupational Preference Inventory, previously described, was also used to rate the motivational orientations of the two instructors of the subjects used in the study.

Inventory of Multimedia Lea[illegible]ng

Two inventories, patterned after the well-tested Occupational Preference Inventory, were tailored to the unique situations of the subject matter areas used in the study. The evaluation of the materials as intrinsically, or as extrinsically, motivating was made by the students themselves.

A copy of each inventory has been included in the Appendix.

Subject Selection and Groupings

Essentially, the total student population in the classes of the two instructors were eligible for the study. In the typing classes,

this included students in beginning, intermediate and advanced typing. In shorthand, all students in beginning and intermediate classes were eligible subjects.

As defined in the study proposal, two types of individuals do not qualify for inclusion: (a) any individuals who are not clearly definable as intrinsically or extrinsically motivated, and (b) individuals with intelligence scores lower than 84. Consequently, to maximize the potential population, subjects include students in both the Fall and Spring Semesters of the 1972-73 school year.

For data analysis, the subjects were grouped on the basis of intelligence and motivational type. Four distinct categories were formed: 1. (HIM) high I.Q.-intrinsically motivated, 2. (HEM) high I.Q.-extrinsically motivated, 3. (AIM) average I.Q.-intrinsically motivated, and 4. (AEM) average I.Q.-extrinsically motivated.

Part II
DATA PROCESSING AND INTERPRETATION

Grouping

The determination of the feasibility for grouping the students on the basis of I.Q. and motivational types depended to a great extent on finding out that no actual dependency pre-existed which might preclude such grouping. To examine that contingency a X^2 statistical treatment was applied to the subjects, as shown in Table I.

Table I

Test for Independence: I.Q. and Motivation Variables

	Intelligence		
Motivation:	HI (95+)	AV (84-94)	sum
INTRINSIC	86	16	102
EXTRINSIC	14	6	20
sum	100	22	122

$X^2 = 2.29$ rejection level (1 d.f.) .90 = 0.0158

(Hypothesis of independence accepted) .10 = 2.706

The data shows no systematic dependency between the I.Q.-motivation variables which would preclude their combination for study purposes.

Furthermore, the grouping was examined by inspection of their I.Q. distributions to make certain that there was an acceptable constancy of I.Q. throughout the type-categories. The means and standard deviations of each group were found to be in reasonably close relationship (see Table 2).

Table 2

I.Q. Means and Standard Deviation by Subject Type

TYPE	M	STD. DEV.
HI I.Q.-Intrinsic (HIM)	110.3	2.20
HI I.Q.-Extrinsic (HEM)	106.9	2.50
AV I.Q.-Intrinsic (AIM)	90.3	2.30
AV I.Q.-Extrinsic (AEM)	89.3	2.80

Testable Hypotheses

Stated in null hypothesis form, the major study hypotheses were:

1. No difference in performance level will be noted for intrinsically motivated students who use intrinsically motivating lesson materials.

2. No difference in performance level will be noted for extrinsically motivated students who use extrinsically motivating lesson materials.

3. No difference in performance level will be noted for intrinsically motivated students who have materials presented by an intrinsically motivated instructor.

4. No difference in performance level will be noted for extrinsically motivated students who have lesson materials presented by an extrinsically motivated instructor.

5. No difference in performance level will be noted for intrinsically motivated students who use intrinsically motivating lesson materials taught by an intrinsically motivated instructor.

6. No difference in performance will be noted for extrinsically motivated students who use extrinsically motivating materials taught by an extrinsically motivated teacher.

Hypothesis Testing

In preparation for data organization and analysis, subjects' performances were rated and categorized into performance levels. See Table 3.

Table 3

Performance: Means, Std. Dev., and Groupings (8-pt. scale)

Subjects	Means	Std. Dev.
HIM	4.74	2.53
HEM	4.57	2.41
AIM	3.38	1.97
AEM	4.50	2.18
All Subjects	4.525	2.47
All IM	5.255	2.72
All EM	4.500	2.35

Performance Groups
(M = 4.525, Std. Dev. = 2.47)

HI>M + 1σ = 8

AV = M ± 1σ = 2 - 7

LO<M - 1σ = 1

To test for any systematic relationships between performances and subject variables a number of relationships were examined.

The first checked the independence of specific performance levels and subjects motivation types. This comparison has been tabulated in Table 4.

Table 4

X^2 Test of Independence: Performance and Subjects' Motivation Orientations

	SUBJECT TYPE				
Performance:	HIM	HEM	AIM	AEM	sum
HI (8)	29	4	2	1	36
AV (2-7)	49	10	7	4	70
LO (1)	8	0	7	1	16
sum	86	14	16	6	122

X^2 = 18.223 rejection level (6 d.f.) .01 = 16.812
(Hypothesis of independence rejected)

The data suggests that a dependency does exist between performance level and the subject type (combined I.Q. and motivational orientation). To examine the nature of this relationship more closely, $(f_o - f_t)^2/f_t$ data was substituted for the raw cell data from Table 4. The results may be read in Table 5.

Table 5

Values of $(f_o - f_t)^2/f_t$ Suggesting Why Performance Was Not Independent of Orientation

	SUBJECT TYPES				
Performance:	HIM	HEM	AIM	AEM	sum
HI	0.517	0.415	1.568	0.334	2.834
AV	0.002	0.482	0.517	0.090	1.091
LO	0.952	1.836	11.453	0.057	14.298
sum	1.471	2.733	13.538	0.481	18.223

Table 5 would seem to indicate that the dependency has been generated by the substantially lower performance of the average intelligence-intrinsically motivated subject.

To delve more deeply into the dependency relationship, the performances of subjects were examined in terms of specific motivational orientations (Table 6) and I.Q. types (Table 7).

Table 6

X^2 Test of Independence: Performance and Subject Motivational Orientations

	MOTIVATION ORIENTATION		
Performance:	Intrinsic	Extrinsic	sum
HI	31	5	36
AV	56	14	70
LO	15	1	16
sum	102	20	122

X^2 = 2.028 rejection level (2 d.f.) .90 = 0.211
.10 = 4.608

(Hypothesis of independence accepted.)

Table 7

X^2 Test of Independence: Performance and Subject I.Q. Type

	I.Q. TYPE		
Performance:	HI (95+)	AV (84-94)	sum
HI	33	3	36
AV	59	11	70
LO	8	8	16
sum	100	22	122

X^2 = 13.605 rejection level (2 d.f.) .01 = 9.210
(Hypothesis of independence rejected.)

To examine the nature of the dependency relationship between performance and I.Q. the values of $(f_o - f_T)^2/f_T$ were substituted in the cells of Table 7. The results may be seen in Table 8.

Table 8

Values of $(fo - f_T)^2/f_T$ Suggesting Why Performance Was Not Independent of I.Q.

	I.Q. TYPE		
Performance:	HI	AV	sum
HI	0.413	1.877	2.290
AV	0.045	0.208	0.253
LO	1.994	9.068	11.062
sum	2.452	11.153	13.605

The performance level of the average I.Q. subject appears lower than could be expected by chance.

Tests for Specific Hypotheses

The data derived in Table 6 shows relatively conclusively that the dependency status noted in Table 4 between combined orientations and performance was not the result of identified motivational characteristics of subjects.

Data limitations in identifying alternative teacher and instructional material motivations has precluded making an interactional analysis of the various dependent variables.

Consequently, based on the data of the study, the six hypotheses of no-difference must be accepted. There is no substantive evidence which has shown that different motivations, or different combinations of variables have promoted or inhibited the performance of the subjects in this study.

Part III

SUMMARY AND CONCLUSIONS

In the introduction to this report it was stated that this study was an attempt to verify a theoretic concept in a real situation. Obviously, this effort has not been able to do that. There has been no substantive proof that the individual, teacher, and/or instructional materials motivational attributes examined in the study were in any identifiable way directly related to performance (the data does indicate a highly probable relationship between I.Q. and performance in two business education subjects).

There are a myriad reasons why differences may not have been found; ranging from population selection to inadequate instruments for measuring specific types of orientations and conditions. In any case, the basic concept seems worthy of further study. If we are to shape attitudes and success through education, we must be able to identify and to find ways of influencing both positively.

BIBLIOGRAPHY

Haywood, H.C. & Dobbs, V. "Motivation and Anxiety in High School Boys." Journal of Personality. 1964, #32, pp. 371-379.

Haywood, H.C. & Wachs, T.D. "Self-Discrimination Learning as a Function of Motivation-Hygiene Orientation in Adolescents." Journal of Educational Psychology. 1966, Vol. 57, #5, pp. 279-286.

Herzberg, F. & Hamlin, R.M. "A Motivation-Hygiene Concept of Mental Health." Mental Hygiene. 1961, #45, pp. 394-401.

Herzberg, F., Mausner, B. & Snyderman, B. The Motivation to Work. New York: Wiley and Sons, Inc. 1959.

Katz, Harvey et al. Internal vs. External Control and Two Examples of Classroom Behavior. ERIC. #ED 054 476. 11 pp.

Newsom, R.S. et al. "Intrinsic Individual Differences: A Basis for Enhancing Instructional Programs." The Journal of Educational Research. Vol. 65, #9, pp. 387-392.

APPENDIX

1. Occupational Preference Inventory
2. Inventory of Multimedia Learning (Typewriting)
3. Inventory of Multimedia Learning (Shorthand)

REASONS FOR MAKING CHOICES

A. I could learn more.
B. It would be easier.
C. People would have more respect for me.
D. It would be safer or healthier.
E. I like to do hard things.
F. I would have more money.
G. I like excitement and adventure.
H. I like to be in charge.
I. I like beautiful things and places.
J. I have done it before.

Which would you rather be:

1. a. librarian or b. dentist
   Why?
2. a. President or b. movie star
   Why?
3. a. florist or b. Navy officer
   Why?
4. a. mountain climber or b. baby sitter
   Why?
5. a. student or b. teacher
   Why?
6. a. play golf or b. work a jigsaw puzzle
   Why?
7. a. truck driver or b. electrician
   Why?
8. a. farmer or b. banker
   Why?
9. a. manager or b. office worker
   Why?
10. a. artist or b. salesman
    Why?

REASONS FOR MAKING CHOICES

A. I could learn more.
B. It would be easier.
C. People would have more respect for me.
D. It would be safer or healthier.
E. I like to do hard things.
F. I would have more money.
G. I like excitement and adventure.
H. I like to be in charge.
I. I like beautiful things and places.
J. I have done it before.

11. a. ditch digger or b. deep-sea diver
Why?

12. a. butcher or b. pilot
Why?

13. a. bird watcher or b. mechanic
Why?

14. a. ride a motorcycle or b. play checkers
Why?

15. a. baseball player or b. scientist
Why?

16. a. cook or b. astronaut
Why?

17. a. watch a sunset or b. sell newspapers
Why?

18. a. trash collector or b. musician
Why?

19. a. photographer or b. keep bees
Why?

20. a. ride a bicycle or b. read a book
Why?

Reasons for Performing Assigned Tasks

A. I felt what I did was important.
B. I like to try new experiences (adventure).
C. I enjoyed doing it.
D. I gave of myself in friendship.
E. I used skill or know-how.
F. I was free to decide what I did and how I did it.
G. I influenced the behavior of somebody.
H. I learned something new.
I. I like to meet a challenge.
J. I was creative.
K. I received respect, recognition, or appreciation from the task.
L. Others felt what I did was important.
M. I received money or its equivalent.
N. I made others happy.
O. I received security.
P. I received the approval of others.
Q. I received friendship and attention.
R. I received grades or credit.

DIRECTIONS: Place in the blanks the letter of a reason(s) (above) that explains why you performed the tasks assigned on taped lessons. Select as many reasons as you like for each assigned task.

_____ 1. Using the taped lessons.

_____ 2. Practicing the drills on the tape.

_____ 3. Taking time writings given by the instructor.

_____ 4. Completing a learning activity (lesson).

_____ 5. Working at a faster (or slower) rate than I do in other classes.

_____ 6. Typing mailable communications to meet various objectives.

_____ 7. Typing the production timing objectives over until they were mailable communications.

_____ 8. Scheduling my own lab hours.

_____ 9. Begin a new area of learning on my own without a lecture on the new material.

_____ 10. Completing an instructional unit (½, 1, 1½ or 2 units).

_____ 11. Opportunity to ask questions at any time.

SHORTHAND

INVENTORY OF MULTIMEDIA LEARNING

Reasons for Performing Assigned Tasks

A. I felt what I did was important.
B. I like to try new experiences (adventure).
C. I enjoyed doing it.
D. I gave of myself in friendship.
E. I used skill or know-how.
F. I was free to decide what I did and how I did it.
G. I influenced the behavior of somebody.
H. I learned something new.
I. I like to meet a challenge.
J. I was creative.
K. I received respect, recognition, or appreciation from the task.
L. Others felt what I did was important.
M. I received money or its equivalent.
N. I made others happy.
O. I received security.
P. I received the approval of others.
Q. I received friendship and attention.
R. I received grades or credit.

DIRECTIONS: Place in the blanks the letter of a reasons (above) that explains why you performed the tasks assigned on taped lessons. Select as many reasons as you like for each assigned task.

_____1. Practicing Shorthand Principles and Words.

_____2. Memorizing Brief Forms.

_____3. Reading with Taped Lesson.

_____4. Timing my Performance on Recall Charts.

_____5. Tracing Shorthand from Textbook Lessons.

_____6. Writing Textbook Lessons in Shorthand.

_____7. Practicing Shorthand Phrases and Abbreviations.

_____8. Previewing Shorthand Words before receiving Dictation.

_____9. Taking Speed Building Dictation at various speeds.

_____10. Typing from my own Shorthand notes.

_____11. Taking new matter Dictation at various speeds for 3 or 5 minutes.

_____12. Typing Mailable Letters from own notes (no time limit).